

TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

695-110P

U.S. APPLICATION NO. (If known, see 37 CFR 1.5)

09/446691

INTERNATIONAL APPLICATION NO.

PCT/EP98/04264

INTERNATIONAL FILING DATE

July 9, 1998

PRIORITY DATE CLAIMED

July 24, 1997

TITLE OF INVENTION

BACK PROTECTOR, IN PARTICULAR FOR MOTORCYCLISTS

APPLICANT(S) FOR DO/EO/US

DAINESE, Lino

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39 (1).
4. ☐ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
- a. ☒ is transmitted herewith (required only if not transmitted by the International Bureau).
- b. ☒ has been transmitted by the International Bureau.
- c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ A translation of the International Application into English (35 U.S.C. 371(c)(3)).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(2)).
- a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
- b. ☐ have been transmitted by the International Bureau.
- c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
- d. ☒ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☒ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern document(s) or information included:

11. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98., PTO-1449 Form, and International Search Report with cited references
12. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A **FIRST** preliminary amendment.
- ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information:
Two (2) Verified Statements Claiming Small Entity
International Preliminary Examination Report (PCT/IPEA/409)
Three (3) sheets of formal drawings

PCT/EP98/04264

Form PTO-1390 (REV 1-98) page 2 of 2

VERIFIED STATEMENT CLAIMING SMALL ENTITY STATUS (37 CFR 1.9(f) & 1.27(c))--SMALL BUSINESS CONCERN

Docket Number (Optional)

695-110P

Applicant or Patentee: DAINESE LinoApplication or Patent No.: NewFiled or Issued: December 27, 1999Title: Back protector, in particular for motorcyclists.

I hereby declare that I am

- ☐ the owner of the small business concern identified below;
☒ an official of the small business concern empowered to act on behalf of the concern identified below:

NAME OF SMALL BUSINESS CONCERN DAINESE S.p.A.
 ADDRESS OF SMALL BUSINESS CONCERN Via dell'Artigianato, 35
36060 - MOLVENA (ITALY)

I hereby declare that the above identified small business concern qualifies as a small business concern as defined in 13 CFR 121.12, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees to the United States Patent and Trademark Office, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention described in:

- ☒ the specification filed herewith with title as listed above.
☐ the application identified above.
☐ the patent identified above.

If the rights held by the above identified small business concern are not exclusive, each individual, concern or organization having rights in the invention must file separate verified statements averring to their status as small entities, and no rights to the invention are held by any person, other than the inventor, who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person made the invention, or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d), or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern or organization having any rights in the invention is listed below:

- ☒ no such person, concern, or organization exists.
☐ each such person, concern or organization is listed below.

Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF PERSON SIGNING RIGON MeriTITLE OF PERSON IF OTHER THAN OWNER ProxyADDRESS OF PERSON SIGNING Via dell'Artigianato, 35 36060 - MOLVENA (ITALY)SIGNATURE X Meri Rigon DATE 12/02/1999

**VERIFIED STATEMENT CLAIMING SMALL ENTITY STATUS
(37 CFR 1.9(f) & 1.27(b))--INDEPENDENT INVENTOR**

Docket Number (Optional)
695-110P

Applicant or Patentee: DAINESE Lino

Application or Patent No.: New

Filed or Issued: December 27, 1999

Title: Back protector, in particular for motocyclists.

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees to the Patent and Trademark Office described in:

- ☒ the specification filed herewith with title as listed above.
☐ the application identified above.
☐ the patent identified above.

I have not assigned, granted, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

- ☐ No such person, concern, or organization exists.
☒ Each such person, concern or organization is listed below.

DAINESE S.p.A.
Via dell'Artigianato, 35
36060 - MOLVENA
ITALY

Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

DAINESE Lino

NAME OF INVENTOR

NAME OF INVENTOR

NAME OF INVENTOR

Signature of inventor

Signature of inventor

Signature of inventor

Date

Date

Date

PATENT
695-110P

IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicant: DAINESE, Lino
Int'l. Appl. No.: PCT/EP 98/04264
Appl. No.: New Group:
Filed: December 27, 1999 Examiner:
For: BACK PROTECTOR, IN PARTICULAR FOR
MOTORCYCLISTS

PRELIMINARY AMENDMENT

BOX PATENT APPLICATION

Assistant Commissioner for Patents
Washington, DC 20231

December 27, 1999

Sir:

The following Preliminary Amendments and Remarks are respectfully submitted in connection with the above-identified application.

AMENDMENTS

IN THE SPECIFICATION:

Please amend the specification as follows:

Before line 1, insert --This application is the national phase under 35 U.S.C. § 371 of PCT International Application No. PCT/EP98/04264 which has an International filing date of July 9, 1998, which designated the United States of America.--

IN THE CLAIMS:

Please amend the claims as follows:

Page 5, line 15, change "8" to -6--

REMARKS

The specification has been amended to provide a cross-reference to the previously filed International Application.

The amendment to the claims is merely to correct minor typographical errors and to place the application into better form prior to examination.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By 
Joseph A. Kolasch, #22,463

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JAK/djm
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(Rev. 03/30/99)

3/PRTS

- 1 -

09/436591
03/01/99 EC 1999

BACK PROTECTOR, IN PARTICULAR FOR MOTORCYCLISTS

FIELD OF THE INVENTION

This invention to a back protector, in particular for motorcyclists.

DESCRIPTION OF THE PRIOR ART

5 Protectors for body parts are known. In certain cases they consist of substantially rigid paddings and/or shields which in the case of a fall absorb the impact, to protect those parts of the motorcyclist's body most exposed to injury and fracture (shoulders, elbows, knees, etc.).

10 These elements are applied to the motorcyclist's suit and generally comprise an outer shell constructed of substantially rigid plastic, an inner layer able to absorb the impact energy, and a layer of soft material provided with means for its fixing to the suit.

15 With regard to back protection, belts are known in the form of a band provided at its rear with a plurality of substantially rigid elements, each consisting of a plate arranged vertically aligned with partial overlap between each plate and the adjacent plate.

20 In the motorcyclist field the objective is to achieve maximum protection of that part of the spinal column comprising the spinal cord, because of the seriousness of possible injury in that anatomical region. As the vertebrae involved by the spinal cord comprise the thoracic vertebrae (as far as the twelfth) and the first two lumbar vertebrae, ie a position which for an individual of average height reaches a few centimetres above the waistline, this belt provides protection in that anatomical region.

25 However, as the protective action preferably also extends to the remaining portion of the spinal column, ie for the remaining lumbar vertebrae,

such back protectors extend below the waistline to also cover part of the glutei.

This protection system has however the drawback that the rigidity of the structure opposes lateral flexure of the trunk and forward and rearward bending, so interfering with the movements required during driving.

EP-A-0 212 206 discloses a plurality of plates which are placed in overlapping relationship in an elongated array extending along the spinal column or other body area to be protected. The plates are pivotally interconnected by joints which allow relative rotation to a limited extent between the plates and limited longitudinal movement between the plates so that the armor structure conforms to body changes during normal movements. Overextension is prevented by abutment of the plates against each other, limiting harmful movement of the protected body portions.

An object of the invention is to eliminate these drawbacks by providing a back protector for the spinal cord and glutei of the spinal column which however allows free lateral flexure of the trunk and forward bending but only moderate rearward bending, while always performing its protective function.

BRIEF SUMMARY OF THE INVENTION

This and further objects which will be apparent from the ensuing description are attained according to the invention by a back protector, in particular for motorcyclists, comprising two vertically aligned supports provided with means for their fixing to a motorcyclist's body, each of said supports carrying a plurality of substantially rigid elements fixed thereto, said lower support being hinged to said upper support on a pin..

BRIEF DESCRIPTION OF THE DRAWINGS

This invention is described in detail hereinafter with reference to the accompanying drawings, on which:

Figure 1 is a schematic view of a protector according to the invention,

Figure 2 is a front view thereof,

5 Figure 3 is an enlarged cross-section therethrough on the line III-III of Figure 2,

Figure 4 is an enlarged cross-section therethrough on the line IV-IV of Figure 2, and

10 Figure 5 is a an enlarged cross-section therethrough on the line V-V of Figure 2.

DESCRIPTION OF PREFERRED EMBODIMENTS

As can be seen from the figures, the back protector according to the invention comprises a substantially elliptical upper element 2 extending through a length such as to cover the thoracic vertebrae and the first two lumbar vertebrae, and an underlying element 4 of length such as to cover the remaining lumbar vertebrae and part of the glutei.

In particular, the element 2 consists of a layer of soft expanded material 6 provided with braces 8, an intermediate layer 9 of soft material able to absorb the impact energy, and a plurality of superposed plates 10 (four in the illustrated example), the inner surface of each plate comprising a plurality of ribs 12 which mutually intersect to form a honeycomb structure.

Besides providing each plate with the mechanical strength enabling it to distribute the effects of a concentrated impact, the honeycomb structure itself absorbs a part of the energy to deform by deflection on impact.

Each plate 10 has a depressed lower end portion 14 on which the upper end 16 of the underlying plate is superposed.

The lower element 4 comprises substantially an inner layer 18 of expanded soft material to which there are applied a soft material layer 20 to absorb the impact and two plates 22. The upper plate of the element is hinged on an end pin 26 to the lower end of the lower plate 29 of the upper element 2.

The type of connection between two adjacent plates both of the upper element 2 and of the lower element 4 is shown in Figures 4 and 5. It is made by hinge elements which enable the plates to rotate relative to each other without fissures or cavities being created between one plate and the next.

The expanded material layer 18 is fixed at both ends to a support belt 28 which is secured to the motorcyclist's waist.

The plate structure allows free forward bending movement and follows the back profile in the various positions assumed by the driver.

From the foregoing it is apparent that the protection element of the invention not only provides total protection to the vertebrae of the spinal cord and of the gluteus part, but also, by virtue of the hinging of the two parts and of the hinging between adjacent plates, enables the bust to flex laterally and to bend forward and backward.

Braces and belts have been used in the illustrated embodiment, however the invention also allows the use of support means in the form of buttons, zip fasteners and any element enabling the back protector to be applied to a jacket, a suit or any other article of clothing.

I claim,

1. A back protector, in particular for motorcyclists, comprising two vertically aligned supports provided with means for their fixing to a motorcyclist's body, each of said supports carrying a plurality of substantially
5 rigid elements fixed thereto, said lower support being hinged to said upper support on a pin.
2. A protector as claimed in claim 1, wherein said rigid elements consist of plates comprising on one surface a strengthening grid of ribs.
3. A protector as claimed in claim 2, wherein said plates of each support
10 are connected together mechanically by hinge elements.
4. A protector as claimed in claim 1, wherein said upper support also comprises an intermediate layer of material providing impact absorption.
5. A protector as claimed in claim 1, wherein said lower support also comprises an intermediate layer of material providing impact absorption.
- 15 8. A protector as claimed in claim 1, wherein said upper element is provided with braces.
7. A protector as claimed in claim 1, wherein said lower element is provided with a belt.

ABSTRACT OF THE DISCLOSURE

A back protector, in particular for motorcyclists, comprising two vertically aligned supports provided with means for their fixing to a motorcyclist's body, each of said supports carrying a plurality of substantially rigid elements fixed thereto, said lower support being hinged to said upper support on a pin.

5

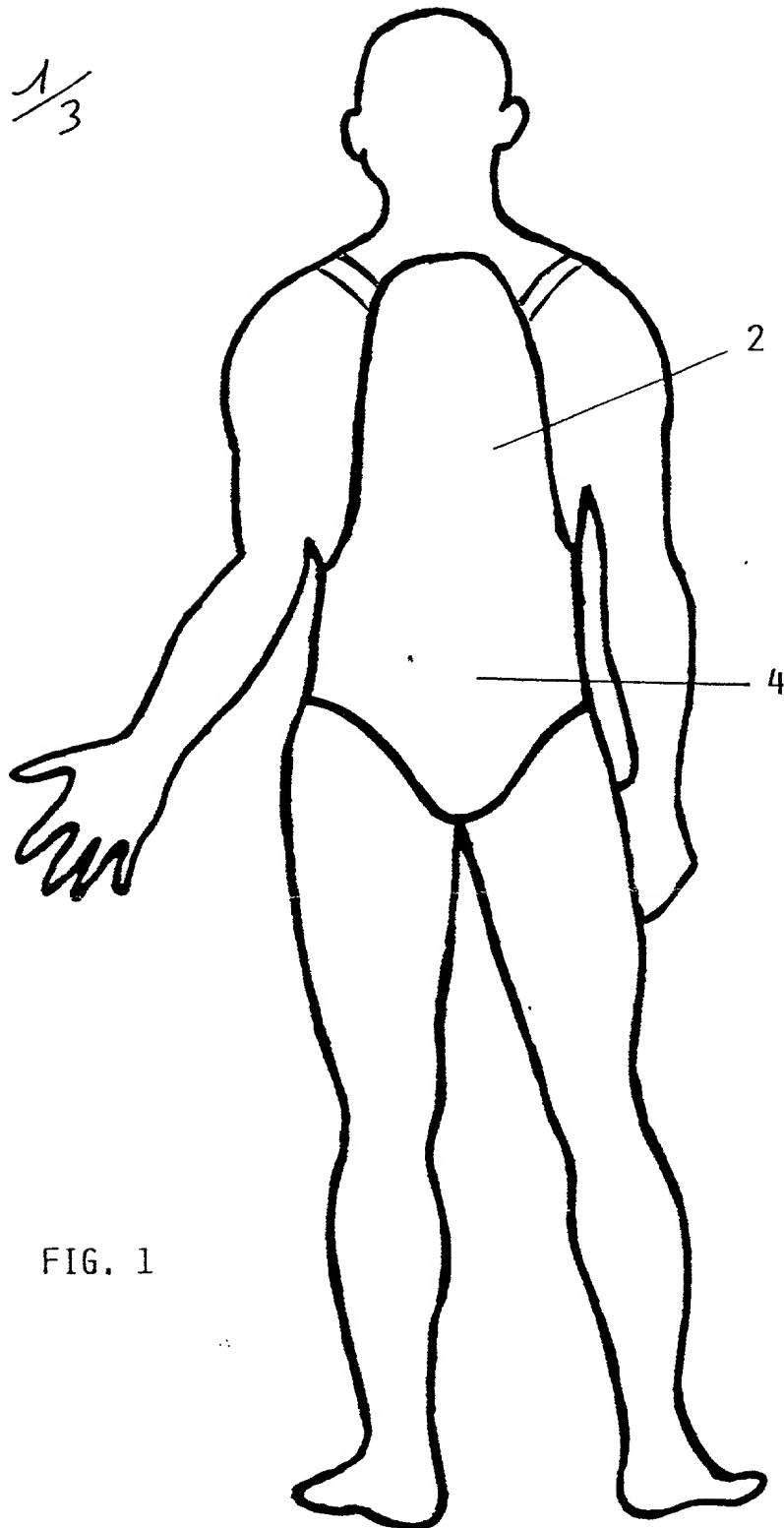
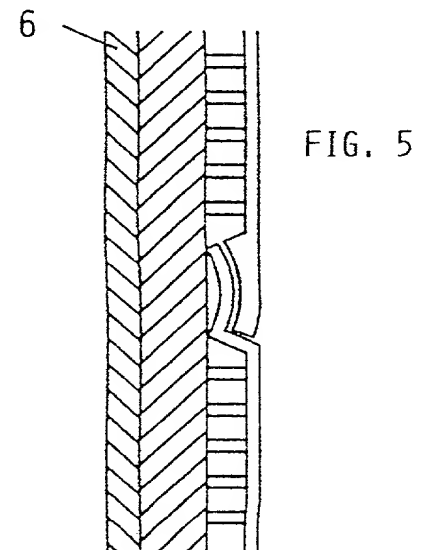
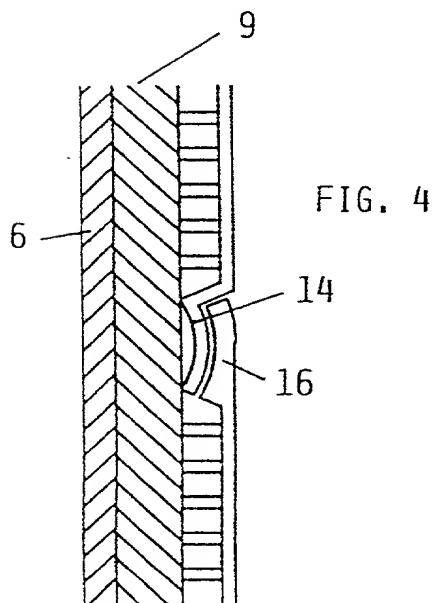
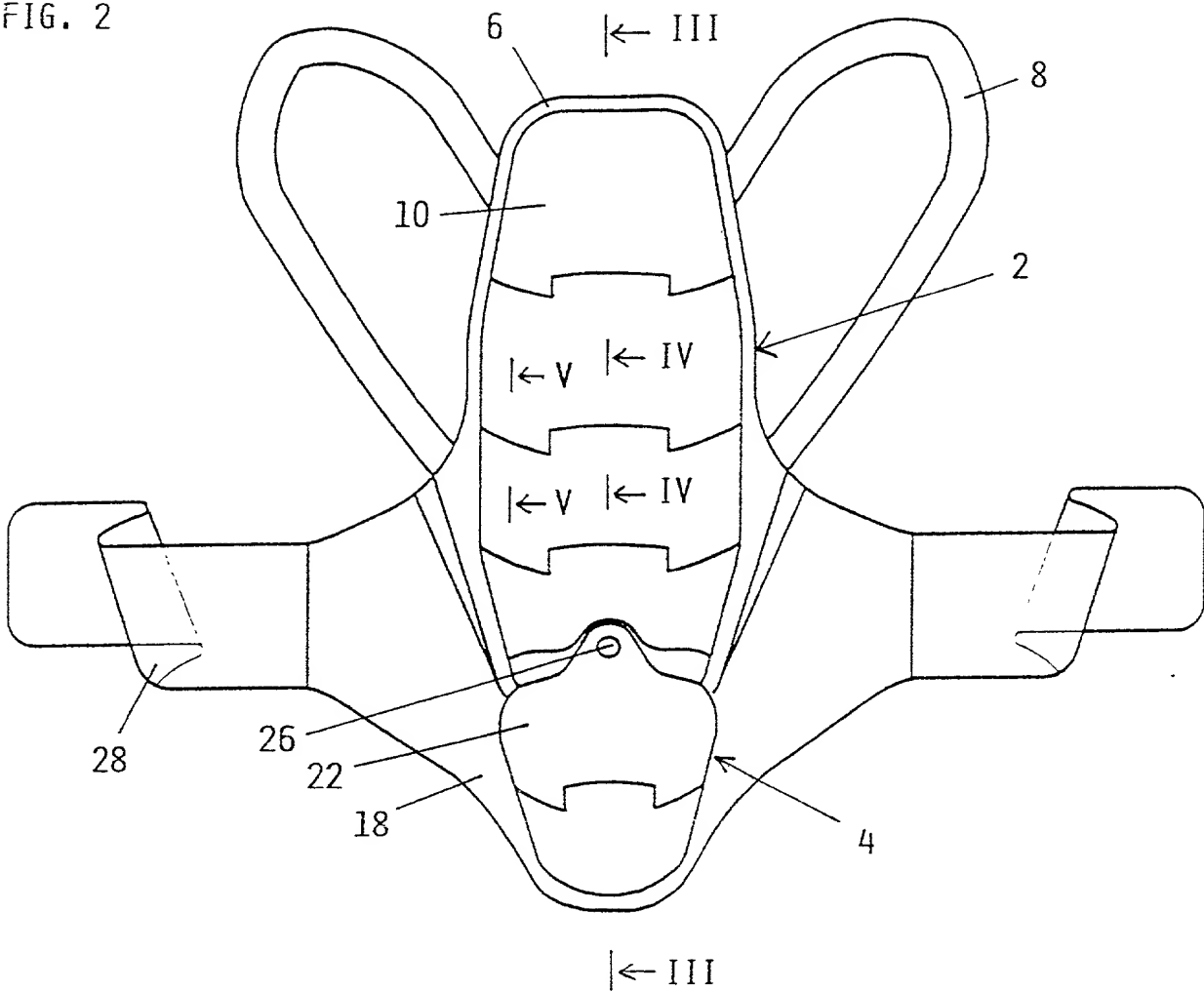


FIG. 1

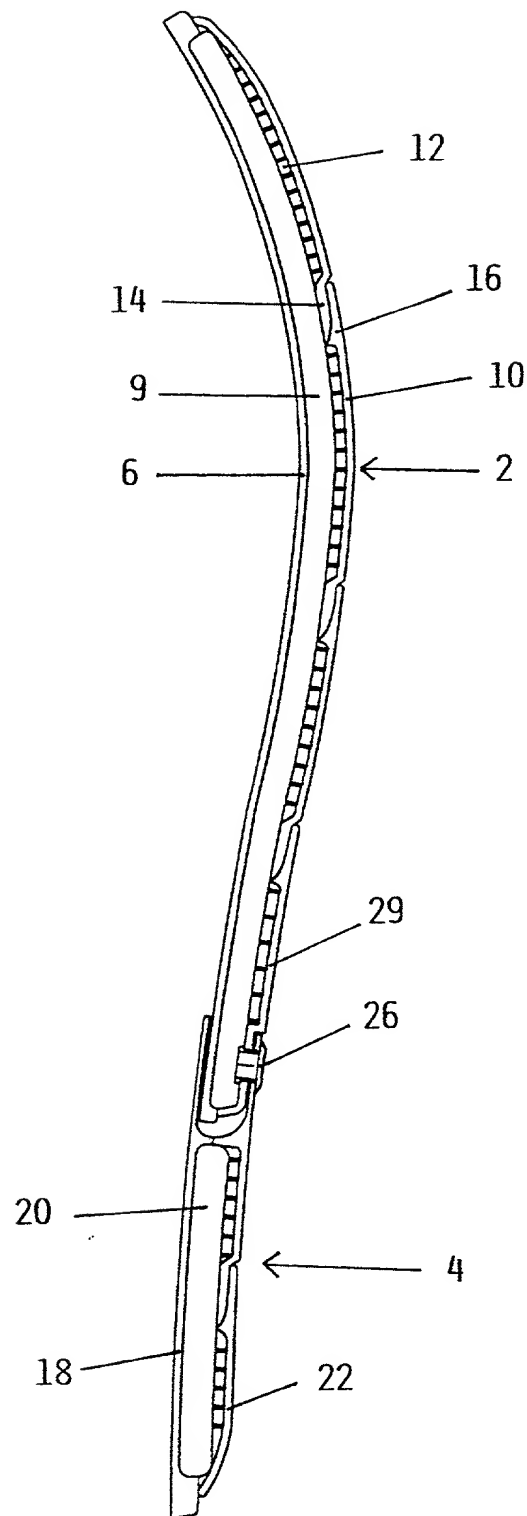
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FIG. 2



$\frac{3}{3}$

FIG. 3



PLEASE NOTE:
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BIRCH, STEWART, KOLASCH & BIRCH, LLP

P.O. Box 747 • Falls Church, Virginia 22040-0747
Telephone: (703) 205-8000 • Facsimile: (703) 205-8050

Attorney Docket No.

695-110P

COMBINED DECLARATION AND POWER OF ATTORNEY FOR PATENT AND DESIGN APPLICATIONS

As a below named inventor, I hereby declare that: my residence, post office address and citizenship are as stated next to my name; that I verily believe that I am the original, first and sole inventor (if only one inventor is named below) or an original, first and joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

Back protector, in particular for motorcyclists.

Insert Title:

Fill in Appropriate
Information -
For Use Without
Specification
Attached:

the specification of which is attached hereto. If not attached hereto,

the specification was filed on _____ as
United States Application Number _____;
and amended on _____ (if applicable) and/or
the specification was filed on _____ as PCT
International Application Number _____; and was
amended under PCT Article 19 on _____ (if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

I do not know and do not believe the same was ever known or used in the United States of America before my or our invention thereof, or patented or described in any printed publication in any country before my or our invention thereof or more than one year prior to this application, that the same was not in public use or on sale in the United States of America more than one year prior to this application, that the invention has not been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representative or assigns more than twelve months (six months for designs) prior to this application, and that no application for patent or inventor's certificate on this invention has been filed in any country foreign to the United States of America prior to this application by me or my legal representatives or assigns, except as follows.

I hereby claim foreign priority benefits under Title 35, United States Code, §119(a)-(d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

Priority Claimed

Insert Priority
Information:
(if appropriate)

VE97U000036

07/24/97

(Number)

(Country)

(Month/Day/Year Filed)

☒ Yes ☐ No

(Number)

(Country)

(Month/Day/Year Filed)

☐ Yes ☐ No

(Number)

(Country)

(Month/Day/Year Filed)

☐ Yes ☐ No

(Number)

(Country)

(Month/Day/Year Filed)

☐ Yes ☐ No

I hereby claim the benefit under Title 35, United States Code, §119(e) of any United States provisional applications(s) listed below.

Insert Provisional
Application(s):
(if any)

(Application Number)

(Filing Date)

(Application Number)

(Filing Date)

All Foreign Applications, if any, for any Patent or Inventor's Certificate Filed More than 12 Months (6 Months for Designs) Prior to the Filing Date of This Application:

Country

Application Number

Date of Filing (Month/Day/Year)

Insert Requested
Information:
(if appropriate)

I hereby claim the benefit under Title 35, United States Code, §120 of any United States and/or PCT application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States and/or PCT application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose information which is material to the patentability as defined in Title 37, Code of Federal Regulations, §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

Insert Prior U.S.
Application(s):
(if any)

(Application Number)

(Filing Date)

(Status - patented, pending, abandoned)

(Application Number)

(Filing Date)

(Status - patented, pending, abandoned)

I hereby appoint the following attorneys to prosecute this application and/or an international application based on this application and to transact all business in the Patent and Trademark Office connected therewith and in connection with the resulting patent based on instructions received from the entity who first sent the application papers to the attorneys identified below, unless the inventor(s) or assignee provides said attorneys with a written notice to the contrary:

Raymond C. Stewart
Joseph A. Kolasch
Bernard L. Sweeney
Charles Gorenstein
Leonard R. Svensson
Andrew D. Meikle
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(Reg. No. 29,680)
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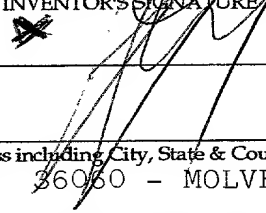
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Telephone: (703) 205-8000 • Facsimile: (703) 205-8050

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GIVEN NAME/FAMILY NAME DAINESE Lino		INVENTOR'S SIGNATURE 	DATE* 12/02/1999
Residence (City, State & Country) MOLVENA (ITALY) ITX		CITIZENSHIP Italian	
POST OFFICE ADDRESS (Complete Street Address including City, State & Country) Via dell'Artigianato, 35 36060 - MOLVENA (ITALY)			
GIVEN NAME/FAMILY NAME		INVENTOR'S SIGNATURE	DATE*
Residence (City, State & Country)		CITIZENSHIP	
POST OFFICE ADDRESS (Complete Street Address including City, State & Country)			
GIVEN NAME/FAMILY NAME		INVENTOR'S SIGNATURE	DATE*
Residence (City, State & Country)		CITIZENSHIP	
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Residence (City, State & Country)		CITIZENSHIP	
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GIVEN NAME/FAMILY NAME		INVENTOR'S SIGNATURE	DATE*
Residence (City, State & Country)		CITIZENSHIP	
POST OFFICE ADDRESS (Complete Street Address including City, State & Country)			

*DATE OF SIGNATURE